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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|-----------------------|---------------------|------------------|
| 10/575,969   | 04/14/2006  | Melanie Klasen-Memmer | MERCK-3157          | 5118             |
| 23599 7590 05/05/2009<br>MILLEN, WHITE, ZELANO & BRANIGAN, P.C.<br>2200 CLARENDON BLVD.<br>SUITE 1400<br>ARLINGTON, VA 22201 |             |                       |                     |                  |
| EXAMINER   |             |                       |                     |                  |
| WU, SHEAN CHIU   |             |                       |                     |                  |
| ART UNIT   |             | PAPER NUMBER          |                     |                  |
| 1795   |             |                       |                     |                  |
| NOTIFICATION DATE  |             | DELIVERY MODE         |                     |                  |
| 05/05/2009   |             | ELECTRONIC            |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

### Office Action Summary

**Application No.**

10/575,969

**Applicant(s)**

KLASEN-MEMMER ET AL.

**Examiner**

Shean C. Wu

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CD/CD)  
Paper No(s)/Mail Date 4/8/09
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The indicated allowability of claims 1-7 and 9-14 are withdrawn in view of the newly discovered reference to WO 03/010120. Rejections based on the newly cited reference(s) follow.

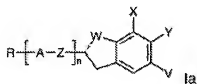
#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/010,120 or equivalent US 2004/0,017,866.

The reference discloses novel indane compounds represented by formula below



in which:

R, in each case independently of one another, is an alkyl or alkoxy radical having 1 to 12 carbon atoms which is unsubstituted, monosubstituted by  $-\text{CF}_3$  or at least monosubstituted by halogen, an oxaalkyl, alkenyl or alkenyloxy radical having 2 to 12 carbon atoms or an oxaalkenyl radical having 3 to 12 carbon atoms, where one or more  $\text{CH}_2$  groups in these radicals may also, in

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each case independently of one another, be replaced by  $-\text{O}-$ ,  $-\text{S}-$ ,  $-\text{CO}-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$  or  $-\text{OCO}-\text{O}-$  in such a way that heteroatoms are not linked directly to one another,

A, in each case independently of one another, is 1,4-phenylene, in which  $-\text{CH}-$  may be replaced once or twice by  $=\text{N}-$  and which may be mono- to tetrasubstituted, independently of one another, by halogen ( $-\text{F}$ ,  $-\text{Cl}$ ,  $-\text{Br}$ ,  $-\text{I}$ ),  $-\text{CN}$ ,  $-\text{CH}_3$ ,  $-\text{CH}_2\text{F}$ ,  $-\text{CHF}_2$ ,  $-\text{CF}_3$ ,  $-\text{OCH}_3$ ,  $-\text{OCH}_2\text{F}$ ,  $-\text{OCHF}_2$  or  $-\text{OCF}_3$ , 1,4-cyclohexylene, 1,4-cyclohexenylene or 1,4-cyclohexadienylene, in which  $-\text{CH}_2-$  may be replaced once or twice by, independently of one another,  $-\text{O}-$  or  $-\text{S}-$  and which may be mono- or polysubstituted by halogen,

Z, in each case independently of one another, is a single bond, a  $-\text{CH}_2-\text{CH}_2-$ ,  $-\text{CF}_2\text{CF}_2-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{CF}=\text{CH}-$ ,  $-\text{CH}=\text{CF}-$ ,  $-\text{C}\equiv\text{C}-$ ,  $-\text{CO}-\text{O}-$ ,  $-\text{O}-\text{CO}-$ ,  $-\text{O}-\text{CH}_2-$ ,  $-\text{CH}_2-\text{O}-$ ,  $-\text{O}-\text{CF}_2-$  or a  $-\text{CF}_2-\text{O}-$  group,

X is  $-\text{H}$ ,  $-\text{F}$ ,  $-\text{Cl}$ ,  $-\text{CN}$ ,  $-\text{NCS}$ ,  $-\text{CF}_3$ ,  $-\text{OCF}_3$ ,  $-\text{OCHF}_2$ ,

Y, V are each, independently of one another, hydrogen, an alkyl, alkoxy, alkenyl or alkynyl radical having 1 to 15 or, respectively, 2 bis 15 carbon atoms which is unsubstituted, mono-substituted by  $-\text{CF}_3$  or at least mono-substituted by halogen where one or more  $\text{CH}_2$  groups in these radicals may also, in each case independently of one another, be replaced by  $-\text{O}-$ ,  $-\text{S}-$ ,  $-\text{CO}-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$  or  $-\text{OCO}-\text{O}-$  in such a way that heteroatoms are not linked directly to one another,

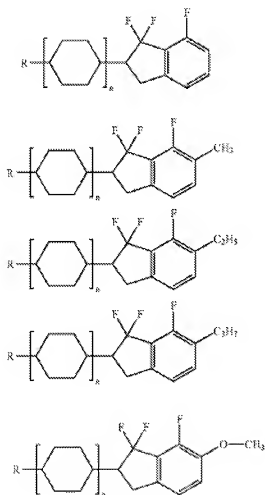
Y is additionally  $-\text{F}$  or  $-\text{Cl}$ ,

W, in each case independently of one another, is  $-\text{O}-$ ,  $-\text{C}(\text{O})-$ ,  $-\text{CHF}-$  or  $-\text{CF}_2-$  or  $-\text{CH}=\text{CF}-$  and, in formula (Ib), additionally  $-\text{CH}_2-$

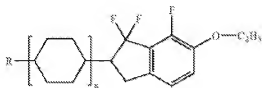
n, m are each, independently of one another, 0, 1, 2, 3 or 4 and the dotted line is a single bond or a double bond,

with the proviso that X in formula (Ib)  $\neq$  H when W is twice  $-\text{CH}_2-$ . In the general formulae (Ia) and (Ib), A is in each case independently of one another preferably unsubstituted or substituted 1,4-phenylene, unsubstituted or substituted 1,4-cyclohexylene, in which  $-\text{CH}_2-$  may be replaced once or twice by  $-\text{O}-$ , or unsubstituted or substituted 1,4-cyclohexenylene.

The following structures are very particularly preferred:



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wherein

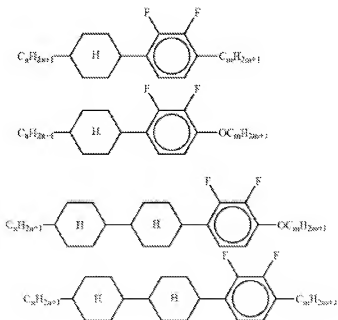
n=1 and R=n-alkyl, in particular C<sub>1</sub>-C<sub>5</sub>-alkyl,n=2 and R=n-alkyl, in particular C<sub>1</sub>-C<sub>5</sub>-alkyl,

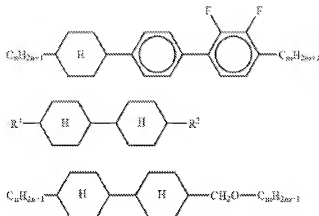
n=1 and R=n-alkenyl, in particular vinyl, prop-1-enyl, but-1-enyl and but-3-enyl,

n=2 and R=n-alkenyl, in particular vinyl, prop-1-enyl, but-1-enyl and but-3-enyl.

(see pages 18-19 of WO '120 or col. 19 to col. 20 of US '866). The reference compounds having negative dielectric anisotropy are useful for liquid crystal media used in clocks, signs and computers.

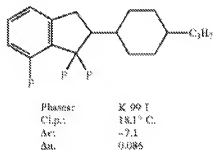
The reference further discloses the suitable compounds including the compounds represented by





where m, n=1-8.

, which read on the present formula IIA, IIB and III (see pages 30-31 of WO '120 or col. 33 to col. 34 of US '866). Also, see the compound



shown on page 41 of WO '120 or col. 41 of US '866.

The reference examples 14 and 15 have LC properties similar to the present examples M1 to M7. The reference examples and comparative example (on page 37 in the present specification) differs from the present claims in that the claims comprise a cyclohexenylene instead of bi-cyclohexenylene next to indane core. However, the compounds of indane core with a cyclohexenylene are disclosed by the reference (see compounds cited on pages 4 and 5), therefore, it would have been obvious to those

skilled in the art substitute a cyclohexenylene for bi-cyclohexenylene and optimize these disclosed compounds in the reference examples to arrive at the claimed invention.

***Response to Arguments***

4. Applicant's arguments, see remarks, filed 4/8/09, with respect to the rejections in the previous Office action have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground of rejection is made in view of WO 03/101,120. Applicants should submit more evidences, for example side by side comparison, to show the present invention is superior to the reference teaching.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C. Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 10:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kelly Cynthia can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shean C Wu/  
Primary Examiner, Art Unit 1795

SCW